INTEGRATED ENGINEERING GROUP
TRANSPORTATION PLANNING AND ENGINEERING

Date: January 29, 2024

To: County Traffic Engineer, County of San Bernardino

From: George Ghossain, Principal Engineer, Integrated Engineering Group

Subject: Powerflex Solar Project Trip Generation Assessment, County of San Bernardino

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Integrated Engineering Group (IEG) is pleased to submit this trip generation assessment memorandum (memo) for the proposed Powerflex Solar Project in the County of San Bernardino. The project is proposing the construction of a 5-megawatt solar PV electricity generation facility on 38.95 acres of vacant land (Proposed Project) adjacent to the Omya Incorporated (OMYA) facility that it is designed to serve. OMYA is an existing facility that operates a calcium carbonate mining and processing operation on Crystal Creek Road approximately 4 miles south of State Highway 18 south of the unincorporated town of Lucerne Valley. The objective is to ensure that this memo fully addresses the County of San Bernardino General Plan and analysis requirements per San Bernardino County Transportation Authority (SBCTA) *Recommended Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, February 2020.

The preliminary site plan for the proposed Project is shown on **Attachment 1**. Construction of the project is expected to begin October 2025 and last up to 8 months, with a peak workforce of 40 construction workers on the site. Construction would be comparable to other renewable energy projects and is anticipated to be divided into the following sequence, with some overlap:

1. Roads, grading, and fencing
2. Electrical infrastructure,
3. PV assembly and installation,
4. Substation interconnection,
5. Electrical system upgrades,
6. PV commissioning, and
7. Project finalization.

Table 1 provides a summary of the Project's construction phases, anticipated construction equipment and maximum vehicle daily trips. Various elements of the Project would be constructed concurrently on the property. The total duration of construction is not expected to exceed 8 months.

Table 1 - Construction Phases and Anticipated Construction Equipment

Phase Name/Duration	Equipment Quantity	Trips/Day
1: Site Preparation (1 month/20 working days)	1 Bore/Drill Rig	**Worker:** 12
	1 Cement/Mortar Mixer	
Staging areas established; set access points; runoff controls, barriers, and fencing installed, minimal grading and scraping.	1 Excavators	
	2 Graders	
	1 Rollers	
	1 Skid-Steer Loader	
	2 Generator Sets	
	3 Off-Highway Trucks (Pick-up)	
	1 Off-Highway Truck (Water)	
	1 Tractor/Loader/Backhoes	
	1 Rubber-Tired Dozers	
2: Underground Work (1 month/20 working days)	1 Dumper/Tender	**Worker:** 25
	2 Generator Sets	
Set manholes, excavate, concrete backfill, surface restoration, pulling cable, splicing, temporary preparation work on existing utility circuit, structure installation, transfer other utilities and conductor installation, wire clipping.	1 Roller	
	3 Off-Highway Trucks (Pick-up)	
	1 Off-Highway Truck (Water)	
	2 Trenchers	
	2 Compactors	
	1 Tractors/Loaders/Backhoes	
3: System Installation (5 months / 110 working days)	2 Forklifts	**Worker:** 40 **PV-Panel Delivery:** 20*
	2 Generator Sets	
Installation of support beams, module rail assemblies, PV modules, inverters, transformers, and buried electrical cables. Concrete for footings, foundations, and pads for the transformers and inverters.	6 Off-Highway Trucks (Pick-up)	
	1 Off-Highway Truck (Other)	
	3 Off-Highway Trucks (Concrete)	
	1 Off-Highway Truck (Flatbed)	
	1 Off-Highway Truck (Water)	
	2 Augers	
	2 Pile Drivers	
	1 Other General Industrial Equipment	
4: Testing (1 month/20 working days) Test facility generation and connection to grid.	1 Generator Sets	**Worker:** 10
	3 Off-Highway Trucks (Pick-up)	
	2 Off-Highway Trucks (Other)	

Phase Name/Duration	Equipment Quantity	Trips/Day
5: Clean-up/Restoration (1 month/20 working days)	1 Grader	**Worker:** 5
	1 Off-Highway Truck (Water)	
Removal/recycling of construction waste and debris; re-seeding as needed.	3 Off-Highway Trucks (Pick-up)	

* Approximate maximum daily rate. Approximately 70 truck trips for PV solar panel delivery are anticipated over a 20- to 30-day period. Day-to-day trip amounts will vary widely from as much as 20 to as little as one (average 10).

The Project construction sequence is expected to begin with land preparation for installation of the PV module structures. Any large vegetation and brush that currently exists on the site will be removed and the surface graded flat where necessary for safe construction practices. In areas of the Project site where feasible, existing low-lying vegetation will be mowed and rolled where possible to provide ground cover and minimize dust generation. A stabilized entrance/exit will be provided to clean vehicle wheels prior to exiting the construction area.

TRIP GENERATION

Trip generation is a measure or forecast of the number of trips that begin or end at the project site. The traffic generated is a function of the extent and type of development proposed for the site. These trips will result in some traffic increases on the streets where they occur. For the purposes of this analysis, the forecasted trips generated by the project assume that trips will occur during the construction phase only since the project, once constructed and in operation, will be unmanned with no office or operation space constructed on site. The operation of the site will be monitored remotely and not requiring any employees to be present on site. Site routine maintenance and inspections will be performed consistent with an established monthly maintenance schedule and time of need.

Construction Trips

Project construction peak hour trips are anticipated to occur outside the typical peak hours of the network since construction workers will need to be at the construction site prior to 7am and depart the site at 3pm; however in order to evaluate the worst-case scenario, it is assumed that construction workers arrive during the AM peak hour and depart during the peak hour traffic of the adjacent street with truck trips occurring randomly over the course of the work day.

Based on these assumptions, a daily and peak hour trip generation has been calculated for the project. It is estimated that 40 workers (worst-case scenario) will work on the site during the eight-month peak construction period of which 25 employees will arrive alone and 10 employees will carpool. Other ancillary project related truck trips are also accounted for as shown in **Table 2**.

Table 2 - Project Construction Traffic Generation Forecast

Use	Total # of Units	Vehicle Conversion Rate	Multiplying Factor	Daily Trips	AM Peak Hour			PM Peak Hour		
					Total	In	Out	Total	In	Out
Construction Worker (single occupancy)	25	1	2	50	25	25	0	25	0	25
Construction Worker (carpooling 2+)[1]	15	0.5		16	8	8	0	8	0	8
Construction Equipment & Solar Panel Site Delivery - Truck Trips[2]	10	1		20	2	1	1	2	1	1
Subtotal - NET Project Trips				***86***	***35***	***34***	***1***	***35***	***1***	***34***
Construction Equipment & Solar Panel Site Delivery - Truck Trips (PCE)[3]	10	3	2	60	6	3	3	6	3	3
Total - NET Project Trips (PCEs)				**126**	**39**	**36**	**3**	**39**	**3**	**36**

Notes:
[1] Carpooling two employees per vehicle.
[2] Majority of site deliveries are done outside the peak hours
[3] Passenger car equivalent factor of 3.0; 4+ Axle Trucks (worst case scenario)

As shown in **Table 2,** the proposed project is estimated to generate approximately 126 daily trips, 39 AM peak hour trips and 39 PM peak hour trips.

SBCTA Recommended Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment (February 2020) provides screening criteria for projects that would be exempt from performing a Traffic Analysis based on an established peak hour trip generation threshold. The project is forecasted to generate less than 100 to 250 peak hour trips and is not expected to add 50 peak hour trips to a State highway. Therefore, this project would be exempt from performing a Traffic Analysis by demonstrating a project trip generation of less than 100 to 250 peak hour vehicle trips.

CONCLUSION

The proposed Powerflex Solar Project is located within the County of San Bernardino and consists of a 5-megawatt solar PV electricity generation facility on 38.95 acres of vacant land adjacent to the exiting OMYA facility designed to serve. It is determined that the proposed project qualifies for an exemption from conducting a detailed traffic impact analysis based on the traffic assessment and technical information provided in this memo. It is our recommendation that a full TIA should not be required based on the technical information provided in this memorandum.

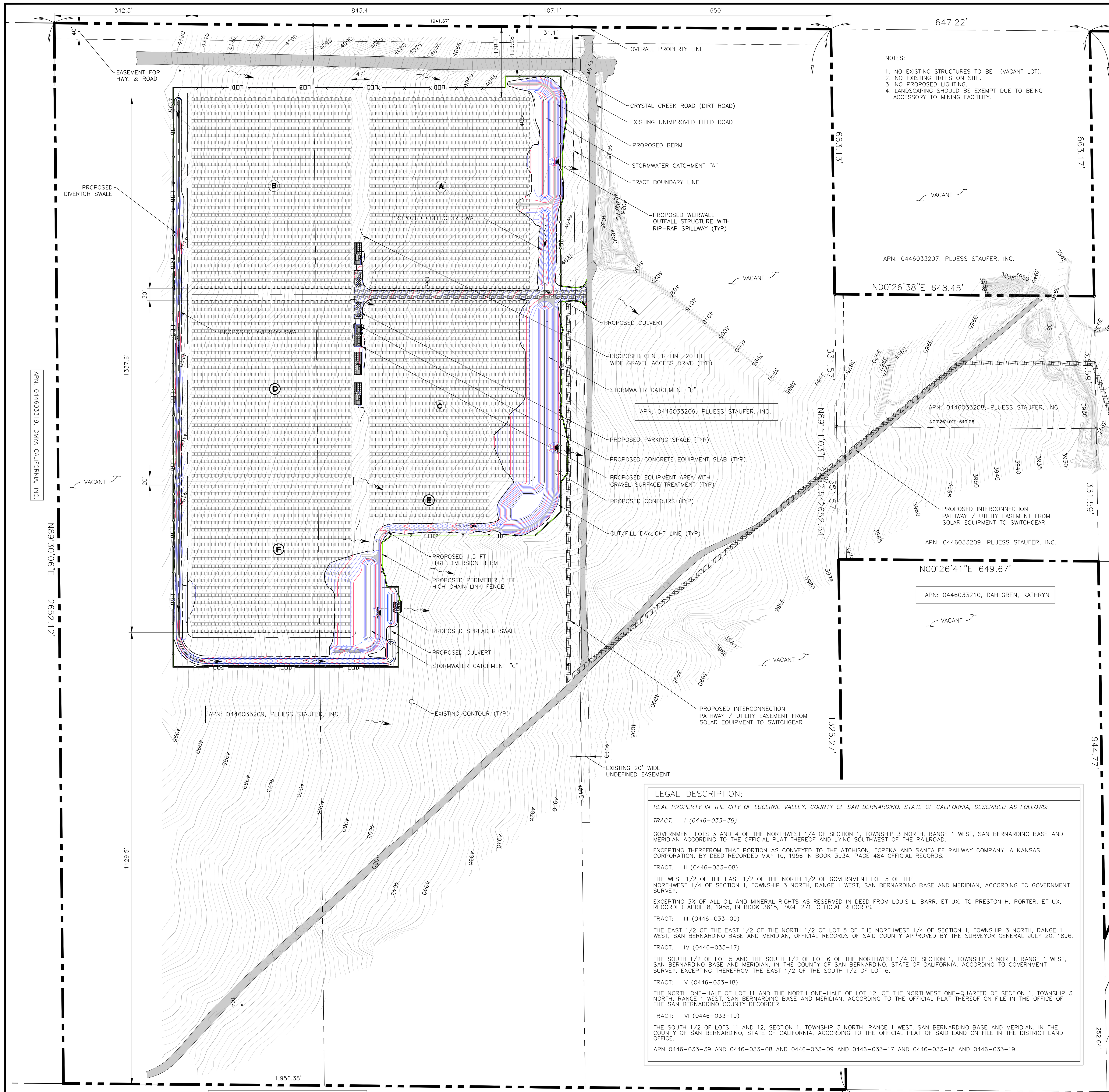
INTEGRATED ENGINEERING GROUP
TRANSPORTATION PLANNING AND ENGINEERING

If you have any questions or concerns, please feel free to contact George Ghossain at:

Email: george@intenggroup.com
Phone: (951) 239-1546
Address: 23905 Clinton Keith Road 114-280
Wildomar CA, 92595

Attachment 1 – Project Site Plan

Attachment 1 – Project Site Plan



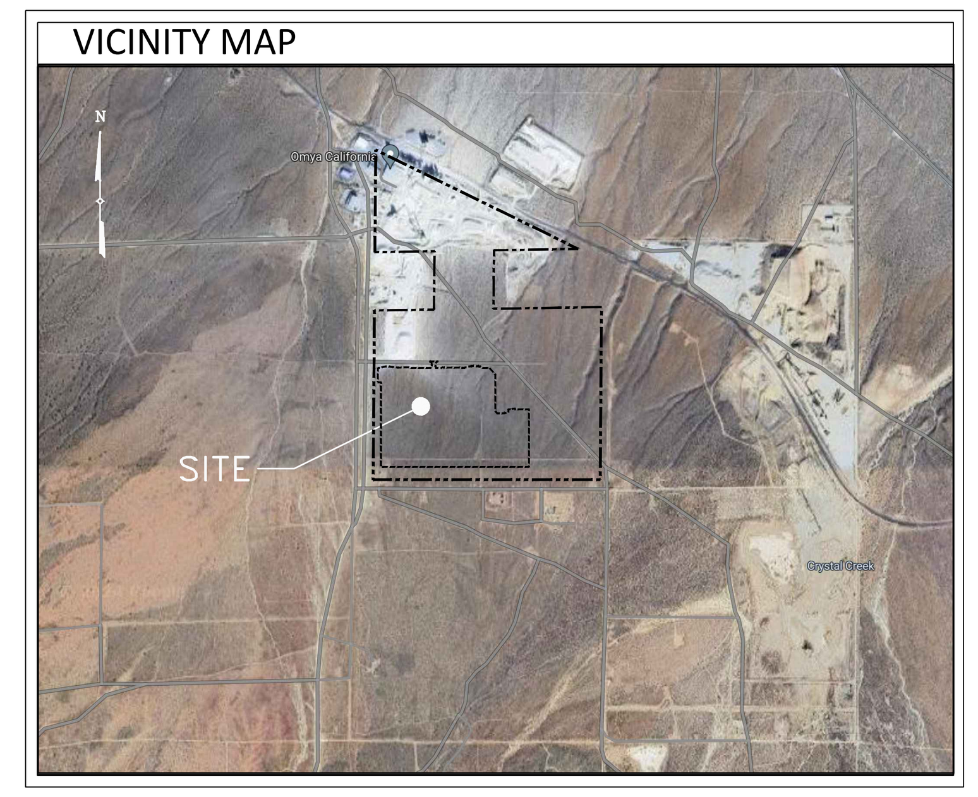
SPECIAL USE PERMIT PLAN

SCALE: 1" = 120'

NOTES:

1. NO EXISTING STRUCTURES TO BE (VACANT LOT).
2. NO EXISTING TREES ON SITE.
3. NO PROPOSED LIGHTING.
4. LANDSCAPING SHOULD BE EXEMPT DUE TO BEING ACCESSORY TO MINING FACITLITY.

VICINITY MAP



LEGAL DESCRIPTION:

REAL PROPERTY IN THE CITY OF LUCERNE VALLEY, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

TRACT: I (0446-033-39)

GOVERNMENT LOTS 3 AND 4 OF THE NORTHWEST 1/4 OF SECTION 1, TOWNSHIP 3 NORTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN ACCORDING TO THE OFFICIAL PLAT THEREOF AND LYING SOUTHWEST OF THE RAILROAD.

EXCEPTING THEREFROM THAT PORTION AS CONVEYED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, A KANSAS CORPORATION, BY DEED RECORDED MAY 10, 1956 IN BOOK 3934, PAGE 484 OFFICIAL RECORDS.

TRACT: II (0446-033-08)

THE WEST 1/2 OF THE EAST 1/2 OF THE NORTH 1/2 OF GOVERNMENT LOT 5 OF THE NORTHWEST 1/4 OF SECTION 1, TOWNSHIP 3 NORTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, ACCORDING TO GOVERNMENT SURVEY.

EXCEPTING 3% OF ALL OIL AND MINERAL RIGHTS AS RESERVED IN DEED FROM LOUIS L. BARR, ET UX, TO PRESTON H. PORTER, ET UX, RECORDED APRIL 8, 1955, IN BOOK 3615, PAGE 271, OFFICIAL RECORDS.

TRACT: III (0446-033-09)

THE EAST 1/2 OF THE EAST 1/2 OF THE NORTH 1/2 OF LOT 5 OF THE NORTHWEST 1/4 OF SECTION 1, TOWNSHIP 3 NORTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, OFFICIAL RECORDS OF SAID COUNTY APPROVED BY THE SURVEYOR GENERAL JULY 20, 1896.

TRACT: IV (0446-033-17)

THE SOUTH 1/2 OF LOT 5 AND THE SOUTH 1/2 OF LOT 6 OF THE NORTHWEST 1/4 OF SECTION 1, TOWNSHIP 3 NORTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, ACCORDING TO GOVERNMENT SURVEY. EXCEPTING THEREFROM THE EAST 1/2 OF THE SOUTH 1/2 OF LOT 6.

TRACT: V (0446-033-18)

THE NORTH ONE-HALF OF LOT 11 AND THE NORTH ONE-HALF OF LOT 12, OF THE NORTHWEST ONE-QUARTER OF SECTION 1, TOWNSHIP 3 NORTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF ON FILE IN THE OFFICE OF THE SAN BERNARDINO COUNTY RECORDER.

TRACT: VI (0446-033-19)

THE SOUTH 1/2 OF LOTS 11 AND 12, SECTION 1, TOWNSHIP 3 NORTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT OF SAID LAND ON FILE IN THE DISTRICT LAND OFFICE.

APN: 0446-033-39 AND 0446-033-08 AND 0446-033-09 AND 0446-033-17 AND 0446-033-18 AND 0446-033-19

SHEET LEGEND:

EXISTING PROPERTY LINE	EXISTING GRAVEL
EXISTING ROW LINE	EXISTING HYDRANT
EXISTING CENTER LINE	EXISTING CONTOURS
EXISTING ROAD STRIPING	EXISTING BUILDING
EXISTING PAVEMENT	EXISTING CONCRETE
FLOW ARROW	PROPOSED GRAVEL SURFACE
EXISTNG SPOT GRADE	PROPOSED CHAINLINK FENCE
EXISTING LIGHT	PROPOSED SOLAR PANELS
EXISTING BENCHMARK	PROPOSED CONTOURS

SITE DATA:

ZONING: LV/CI
(LUCERNE VALLEY COMMUNITY INDUSTRIAL)
APN# 044603318
PROPERTY OWNER: PLUESS-STAUFFER, INC.
JURISDICTION: COUNTY OF SAN BERNADINO
FLOOD ZONE: 'D' PANEL #06071C6575H (08/28/2008)

SURVEYOR: PBLA SURVEYING, INC.
SURVEY FIELD WORK COMPLETED ON 04/01/2024.
SITE ADDRESS: 7225 CRYSTAL CREEK ROAD, LUCERNE, CA 95458
TOTAL PARCEL AREA 6,889,000.72 SF (±158.149 AC)
GENERAL PLAN/LUC: LIMITED INDUSTRIAL (LI)
REGION: LUCERNE VALLEY-DESERT
SUPERVIORIAL DIST: 3rd

BULK AREA TABLE: LV/CI ZONING CLASSIFICATION

	REQUIRED	EXISTING	PROPOSED
BUILDING LOT COVERAGE	UNLIMITED	0.00 SF	0.00 SF
SOLAR ARRAY SYSTEM IMPERVIOUS COVERAGE	NA	NA	301,721.64 SF/7.28 AC
PROJECT AREA	NA	NA	1,280,244.91 SF/29.39 AC
PERCENT OF IMPERVIOUS COVERAGE	–	0.00%	23.56%
MINIMUM LOT WIDTH	60 FT	2,652 FT	2,652 FT
REQUIRED FRONT YARD: ZONE LV/CI	25 FT	NA	25 FT
REQUIRED SIDE YARD: ZONE LV/CI	25 FT	NA	25 FT
REQUIRED REAR YARD: ZONE LV/CI	NA	NA	N/A
MAXIMUM PANEL TIP HEIGHT	50 FT	NA	18'-0"±
MAXIMUM BUILDING HEIGHT	NA	NA	NA
SUBJECT PROJECT AREA IS CURRENTLY VACANT			

DATE	REVISION DESCRIPTION	PM	ENG	CHK
05/22/24	FOR COMMENT	–	JMP	GB
07/24/24	PER COMMENTS	–	JMP	GB

SEAL

ENGINEER:
Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
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Phone: (949) 502-8555
(800) 829-6531
www.tectonicengineering.com

DEVELOPER:
powerflex
EDF Renewables
805 THIRD AVENUE
NEW YORK, NEW YORK 10022
WWW.POWERFLEX.COM

PAGE SIZE
36" x 24"

PROJECT
SOLAR GROUND MOUNT SYSTEM AT
OMYA
7225 CRYSTAL CREEK ROAD
LUCERNE VALLEY, CA 92356

SYSTEM
DC SYSTEM SIZE: 6.49 MW
AC SYSTEM SIZE: 5.00 MW
MODULE TYPE: CSI SOLAR, CS3W-450MB-AG
MODULE QUANTITY: 14,420
ORIENTATION: 25° TILT, 180° AZIMUTH

WORK ORDER # 11550.07

DRAWING TITLE
SPECIAL USE PERMIT PLAN

SHEET NO.
C1